# CTE Course Descriptions:

## Biomed Pathway: 4-year linked pathway

### *Principles of Biomedicine:*

In this course, students explore concepts of biology and medicine as they take on roles of different medical professionals to solve real-world problems. Over the course of the year, students are challenged in various scenarios including investigating a crime scene to solve a mystery, diagnosing and proposing treatment to patients in a family medical practice, to tracking down and containing a medical outbreak at a local hospital, stabilizing a patient during an emergency, and collaborating with others to design solutions to local and global medical problems.

### *Human Body Systems:*

Students examine the interactions of human body systems as they explore identity, power, movement, protection, and homeostasis in the body. Exploring science in action, students build organs and tissues on a skeletal model; use data acquisition software to monitor body functions such as muscle movement, reflex and voluntary action, and respiration; and take on the roles of biomedical professionals to solve real-world medical cases. Students will also explore various careers such as Anesthesiologist, Athletic Trainer, Burn Care Nurse, Forensic Anthropologist, Neurologist, Ophthalmologist, Physical Therapist, Reconstructive Surgeon, and many more!

### *Medical Interventions:*

Students follow the life of a fictitious family as they investigate how to prevent, diagnose, and treat disease. Students explore how to detect and fight infection; screen and evaluate the code in human DNA; evaluate cancer treatment options; and prevail when the organs of the body begin to fail. Through real-world cases, students are exposed to a range of interventions related to immunology, surgery, genetics, pharmacology, medical devices, and diagnostics.

### *Biomedical Innovations:*

In the final Biomedical pathway course students build on the knowledge and skills gained from previous courses to design innovative solutions for the most pressing health challenges of the 21st century. Students address topics ranging from public health and biomedical engineering to clinical medicine and physiology. They will also have the opportunity to work on an independent project with a mentor and gain further health industry skills that will help them obtain a medical career in the future.

## Kinesiology branch of Biomed: 3rd & 4th-year linked option with Biomed or 2-year program.

### *Sports Medicine:*

This Sports Medicine course offers in-depth instruction and practice in communication skills, ethical and legal responsibilities, medical terminology, injury recognition and prevention, anatomy and physiology, biomechanics, psychology, research, nutrition, tissue response to injury, physical therapy exercises and modalities, professional practice, and sports medicine procedures. Students will also be provided substantial opportunities to practice and apply learned theories and techniques working with school athletes, athletic trainers, physical therapists, strength and conditioning specialists, orthopedic surgeons, and other practicing professionals. Students will intern alongside health care professionals on the playing field, clinic, or fitness center emphasizing a hands-on approach to learning about Sports Medicine.

### *Athletic Training:*

This capstone Athletic Training course educates students about the human body as it pertains to prevention, identification, evaluation, and treatment of athletic injuries. Students will learn about anatomy & physiology, and its importance for proper healing of the body. They will be able to identify medical concepts such as general medical conditions, concussions, and musculoskeletal injuries. Students will engage in hands-on activities with a focus on learning, practicing, and mastering first aid, wound care, CPR, and related skills. They will also have the opportunity to intern and gain work experience with our Athletic Trainer and other health care professionals. This course is ideal for individuals interested in the Sports Medicine, Orthopedics, and Nursing as a career.

## Engineering:4-year Linked Pathway

***Introduction to Engineering Design (I.E.D.):***
Utilizes art concepts coupled with basic math to help train students to become better designers. Students explore different methods of communicating through visual communication.

***Principles of Engineering (P.O.E.):***
Investigation and study of different types of Engineering. Students are taught principle engineering skills and given opportunities to collaborate, design, test and reflect on findings. It serves to aid students to discover which discipline is best for them based on interest and practice.

***Digital Electronics (D.E.):***
Investigate the electrical components, schematics, and inner parts to complex systems. Students are provided opportunities to study electrical internal components of various objects

***Engineering Design Development (E.D.D.):***
This course is comprehensive and provides an opportunity for students to practice the skills they have acquired over the years. They will also be provided an opportunity to network and further investigate the specific engineering field of choice.

## Computer Science Program: 4-year progression of electives

***Web Programming:***
Students will create interactive websites and games while learning how to code in HTML, CSS, and JavaScript. They will also earn certifications and build their online portfolio of work samples to show future employers.

***Web Application:***
Students will learn how to use the power of databases to write fun apps that run on the web and maintain information between sessions. Expanding on content taught in Web Programming, students will earn additional certifications and add to their online portfolio with projects they have created.

***AP Computer Science A:***
Students explore the world of Java programming Students cultivate their understanding of coding through analyzing, writing, and testing code as they explore concepts like modularity, variables, and control structures, using their skills to build programs and games.

***Application Design and Research:***
In this senior capstone course, students explore the design process as they create a program from start to finish which is a culmination of their pathway experience.

***AP Computer Science Principles***: (Can be taken as part of the pathway or a singleton course)
This course helps students understand how computing and technology influence the world around them. In this course, students create digital projects, such as games and apps, to address real-world issues in the same way writers, programmers, engineers, and designers do. No prior coding knowledge is required.

## Green Energy Academy: 3-year California Partnership Academy (cohorted)

- It is a 3-year program that is a "school within a school." PG & E and Grid Alternatives partner with the state of California to bring us this program.

***Green Up and Go-Intro to Energy*:**

Students are exposed to the foundational principles surrounding energy. Students also acquire knowledge regarding a variety of sources of energy, as well as the positive and negative aspects of different energy types. There is a focus on the proper and safe use of tools. Students work cooperatively on a project focused on a current topic relating to energy and utilize the learned skills in the construction of a project. The projects include large scale construction and formal presentation

***Electronics Engineering:***
Students build upon their knowledge of hand tools, power tools, and electrical theory. There are specific areas of focus on safety equipment, direct current electrical theory, and soldering skills.
***Advanced Electronics Engineering:***
Students explore advanced topics and applications of electrical theory. Specific areas of emphasis are A/C electricity, electrical test equipment, and application of basic photovoltaic theory.

**Technical Theater: 2-year CTE Program**

***Technical Theater:***
Students will learn design basics of set, props, costumes, make-up, lights, sound, stage management, box office, house management and Technical Theater careers. In addition to design projects and assignments, students receive hands on experience as a member of the design, building and running crews for the Theater productions. This course serves as a hands-on, lab and project-based program giving the students real world experience in the elements of Technical Theater.
***Advanced Technical Theater:***
Students learn in depth the fundamentals of technical theater including: complete a comprehensive project planning the technical elements for a play, self-correct in response to suggestions, demonstrate the ability to establish aesthetic criteria and apply it in evaluating their own work and that of others and demonstrate an understanding of theater in various cultures and historical periods. There will be a deeper understanding of set design and structural knowledge for building.

**Digital Photography: 2-year CTE Program**

***Digital Photography 1:***
Students will explore concepts like structure, lighting, creativity, and composition as well as introductions to various styles of photography and design.

***Digital Photography 2:***
*Students will explore concepts like structure, lighting, creativity, and composition as well as introductions to various styles of photography and design. They will learn basic theoretical and practical aspects of the photographic process as a form of art and visual expression. Students will also be using and learning more about digital cameras with manually adjustable aperture and shutter speed controls.*

**Teacher Academy: 2-year CTE Program** -Course offered alternates each year. Does not matter in which order courses are taken.

- ***The Universal Career (2023-24)***
- ***Designs for Learning (2024-25)***

The Teacher Academy CTE Pathway Course is designed for juniors and seniors interested in exploring careers in education. This course provides off-campus learning opportunities and experiences in elementary classrooms. Through various projects students will develop their communication, professionalism, and leadership skills. These projects may include the following topics: learning styles, cultural proficiency, instructional and engagement strategies, etc.

**Kinesiology: 2-year CTE Program-**See information above in Biomed Pathway for Sports Medicine and Athletic Training

**Multimedia:1-year singleton course**
Students will use different mediums to make presentations which may combine video, sound, graphics, still photography, animation, and text. They will also use computer technology and various forms of interactive multimedia.

## Videography: 2-Year CTE Program-New for 2004-25 school year

This first course is part of a 2-year progression, the second course, Cinematography, will be offered in 2025-26 school year. Videography is designed to provide students with the technical instruction and practical experiences for aspiring video and film makers in the production of film, video, and new media projects for business and entertainment.